

REMARKS/ARGUMENTS

Objection to the Disclosure

Applicants' have amended pages 7 and 14 to correct the typographical errors noted in the Objection. Withdrawal of the Objection is respectfully requested.

Amendments

Claim 1 is amended above to recite that the phyllosilicate is in the form of sheets and has an interplanar distance of at least 2.00×10^{-9} m. See, for example, original claim 2 and the disclosure at page 5, lines 6-15. Claim 2 is amended to delete superfluous language. New claims 14-27 are directed to further aspects of applicants' invention. See, for example, page 4, lines 23-25, page 5, lines 1-5, page 7, line 10-page 8, line 8, page 8, lines 15-16, page 9, line 16-page 11, line 17, page 13, lines 1-7, page 13, lines 9-11, page 13, lines 20-22, page 14, lines 16-20, page 14, line 22-page 15, line 2, and page 15, lines 3-9.

Rejection under 35 USC §103

Claims 1-12 are rejected as allegedly being obvious in view of Benazzi et al. (US5,997,725). This rejection is respectfully traversed.

Benazzi et al. disclose a catalyst for use in hydrocracking processes. The catalyst comprises a catalytic element and a support, the support comprising at least one 2:1 dioctahedral phyllosilicate which contains fluorine, as well as at least one matrix and optionally at least one Y zeolite with a faujasite structure.

The general formula for dioctahedral 2:1 phyllosilicates as synthesized within a fluorine medium and before bridging is described at column 2, line 52 - column 3, line 7. The matrix within the catalyst is a normally amorphous structure or only slightly crystalline. See, e.g., column 4, lines 27-36. The amounts of matrix, dioctahedral 2:1 phyllosilicate, and Y zeolite for use in the catalyst support are described at column 4, lines 37-50.

The catalyst further contains a catalytic element which, for example, is a metal exhibiting a hydro-dehydrogenating function. The catalytic element is, for example, a metal or compound of a metal from group VIII, such as nickel or cobalt, or a combination of at least one metal or a

compound of a metal from group VI and at least one metal or compound of a metal from group VIII. In addition the catalyst can also further contain phosphorous. See column 4, line 59 - column 6, line 10.

In Example 1, Benazzi et al. describe the preparation of a bridged dioctahedral 2:1 phyllosilicate (PP1) which is used in the preparation of the catalyst component C1 of Example 2. As described in Example 1 at column 7, the reticular spacing d_{001} for the octahedral 2:1 phyllosilicate (PP1) is 1.92 nm. In example 2, PP1 is combined with a solution of ammonium heptamolybdate, nickel nitrate and orthophosphoric acid and calcined in air at 550°C. The resultant catalyst C1 contains 2.5 weight % P_2O_5 , 15 weight % MoO_3 , 5 weight percent NiO, and 40 weight % of the bridged clay.

As described by Benazzi et al., the dioctahedral 2:1 phyllosilicates are bridged by a process in which the phyllosilicate is brought into contact with a solution of polycations (e.g., Keggin ions in Example 1) to form a reaction mixture. Cationic exchange is then performed and product obtained is separated by filtering and washing. See, column 3, lines 38-65 and Example 1.

The catalysts disclosed by Benazzi et al. are described as being used for hydrocracking heavy cuts and are said to exhibit improved activity over the prior art. Further, it is stated that they have improved selectivity towards productions of high quality middle distillates. The feeds used in the hydrocracking process of Benazzi et al. are, for example, gas oils, vacuum distillates, vacuum gas oils and deasphalted residues. See column 5, lines 48-54.

Benazzi et al. do not disclose or suggest a dioctahedral 2:1 phyllosilicate catalyst as recited in Applicants' claims. For example, in Example 1 of Benazzi et al., the resultant phyllosilicate has an interplanar distance of 1.92×10^{-9} m. Compare Applicants' claim 1 wherein the interplanar distance is at least 2.0×10^{-9} m. The Benazzi et al. disclosure provides no suggestion of a phyllosilicate has an interplanar distance of at least 2.0×10^{-9} m or a suggestion as to a process whereby one could obtain such a phyllosilicat. The bridging process disclosed by Benazzi et al. does not suggest the bridging process described in Applicants' disclosure. See, e.g., page 9, line 16 - page 11, line 9. See also Applicant's claims 18 and 28.

The assertion in the rejection that the phyllosilicate of Benazzi et al. would necessarily have the claim interplanary distances on the disclosure of the general formula of the phyllosilicate is incorrect. This general formula relates to the phyllosilicate before bridging.

Moreover, as noted above, Benazzi et al. describe and utilize a different bridging process than that of Applicants.

Furthermore, Benazzi et al. do not provide any guidance which would lead one of ordinary skill in the art to a catalyst which contains platinum or palladium. Benazzi et al. refer to the use of a group VIII metal or a metal compound. However, the metals exemplified in the disclosure suggestion are nickel or perhaps cobalt. See Example 2 wherein the catalyst contains nickel. See also the disclosure at column 4, lines 61-63. Compare Applicants' claim 10.

In the rejection it is argued that it would be obvious to modify the Benazzi et al. process so as to use a feed containing more than 10 carbon atoms. Further, it is argued that the hydrocracking process of Benazzi et al. necessarily reduces the pore point of the feed. Firstly, the rejection provides no rationale as to why the hydroconversion process of Benazzi et al. necessarily results in an improvement by the pore point of a paraffinic feed. Also, the suggestion of Benazzi et al. to use Y zeolite in the catalyst suggests away from extrapolating to feeds that comprise paraffins containing more than 10 carbon atoms. The presence of such components could result in overcracking.

To further demonstrate the unobvious character of Applicants' invention, enclosed herewith is a Rule 1.132 Declaration by Dr. Germain Martino. The Declaration describes comparative experiments using a phyllosilicate prepared by the bridging process in Benazzi et al. and phyllosilicates prepared by the bridging process of the instant application. Both catalysts contain platinum. The catalyst prepared in accordance with the process of Benazzi et al. contains a phyllosilicate having a reticular spacing d_{001} of 1.92 nm. This catalyst, C3, is compared with catalysts C1 and C2 described in Examples 1-4 of Applicants' specification. The phyllosilicate used in the catalyst C1 has a reticular spacing d_{001} of 3.46 nm and the phyllosilicate used in the preparation of catalyst C2 has a reticular spacing of 3.12 nm.

As can be seen, from the Declaration and Applicants' examples, catalysts C1 and C2 use phyllosilicates that have higher interplanary distances. These catalysts in the test results provided higher lube oil yields than that of catalyst C3. These results show, *inter alia*, that the use of catalyst C3, prepared according to Benazzi et al. process, does not achieve the same results as those achieved by catalysts C1 and C2, prepared according to Applicants' process, despite the fact that all three catalysts contain the same noble metal from Group VIII.

In view of the above remarks, it is respectfully submitted that Benazzi et al. fails to provide sufficient motivation which would lead one of ordinary skill in the art to modify the process described therein in such a manner as to arrive at an embodiment in accordance with Applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



Brion P. Heaney (Reg. No. 32,542)
Attorney for Applicant(s)

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
Arlington Courthouse Plaza I
2200 Clarendon Boulevard, Suite 1400
Arlington, Virginia 22201
(703) 812-5308 [Direct Dial]
E-mail address: heaney@mwzb.com

Filed: May 5, 2003